

Local Work Instruction:**Noble Discoverer: Sanitary Waste Discharge - D003****Approved By:****Scope:****Issue Date:****Revision level:****Written By:****Revised By:****Revision/Review Date:****Next Review Date:**

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SCOPE:

This document offers work level instructions for handling, sampling, testing, and reporting associated with the discharge of sanitary waste while operating under the NPDES General Permit AKG-28-8100, onboard the *Noble Discoverer*. Sanitary waste (black water) consists of human body waste discharged from toilets and urinals. The volume of this waste varies with occupancy and treatment systems. Two MSD units have been installed on the *Noble Discoverer*, a primary unit and secondary. For the primary unit, raw sewage enters the MSD's V-1 tank and is finely ground with a macerator. The macerated sewage is then mixed with seawater as it flows to a bio-cell; where direct current is applied using a logically controlled rectification system. The electrochemical reaction produces sodium hypochlorite which kills bacteria and oxidizes organic compounds. Chlorine is not added as a disinfectant to this unit.

The effluent will be sampled using a port located near the discharge point, on the port side located in the main engine room. This discharge will occur through a hull opening below sea level. A visual inspection will be performed on the main deck, port side/aft. A portable field test may be utilized by the M-I SWACO NPDES Compliance Specialist on an as-needed basis to conduct local effluent monitoring bacteria counts and trends.

RESPONSIBILITY:

The M-I SWACO NPDES Compliance Specialist is responsible to ensure that this LMI has been provided to each person prior to conducting this task. Any personnel that may perform the tasks outlined in this document must be familiar with the process, before the rig begins operating under NPDES regulations.

During active drilling operations, the M-I SWACO NPDES Compliance Specialist is responsible for performing the following tasks:

- Document the sanitary waste flow volume.
- Record the quantity of any chemical used.
- Perform and document visual assessments for floating solids, garbage, or foam from discharges of domestic wastes.
- Collect and document samples for pH analysis.

1.0 References:

- 1.0 NPDES GP AKG-28-8100:
 - 1.0.1.1 Table 4— *Effluent Limitations and Monitoring Requirements for Sanitary Wastes* (D003).
- 1.1 Figure 1 – Discharge Points (Weston).
- 1.2 Noble Discoverer Best Management Practices Plan, April 2015.
- 1.3 Noble Discoverer Quality Assurance Project Plan, April 2015.
- 1.4 M-I SWACO Standard Operating Procedures: 1006, 3004, 3005, 2012, 2001, 2002, 2003.
- 1.5 Shell Chemical Inventory and Additives Use Management.
- 1.6 Shell Exploration & Production Company Alaska Venture 2015 Noble Discoverer Waste Management Plan.

2.0 General Requirements:

- 2.0 The M-I SWACO NPDES Compliance Specialist is responsible for sampling and testing all treated sanitary waste effluent prior to discharge to receiving waters. Test results and visual observations will be reported to the Shell Environmental Department.
- 2.1 The Shell Environmental Department is responsible for maintaining the Discharge Monitoring Report (netDMR) and submitting to EPA all discharges sampling, testing and results on a monthly basis. Sample collection will be done in accordance with the Quality Assurance Project Plan.
- 2.2 Noble is responsible for the operation and maintenance of all equipment associated with this discharge. Annual MSD testing and results submittal requirements will be the responsibility of Noble.
- 2.3 In cases of comingled sanitary waste with domestic waste (Discharge 004) discharges, the most stringent discharge limitations for both discharges (Discharge 003 and Discharge 004) will apply to the mixed waste stream.
- 2.4 The M-I SWACO NPDES Compliance Specialist will track and report the concentrations of chemicals used in the process of sanitary wastes using the NPDES Master Spreadsheet.

3.0 Safety Guidelines:

- 3.0 Before any operations can take place, all personnel involved in this process must complete the following details if required by operator or contractor:
 - 3.0.1 The Pre-Tour Meeting is when daily activities are discussed.
 - 3.0.2 Perform JSA with all involved parties present.
 - 3.0.3 Review Risk Assessment, if applicable
 - 3.0.4 Noble Permit to Work.
- 3.1 Appropriate personal protective equipment must be worn at all times.

4.0 Discharge/Task Description:

- 4.0 All sanitary waste collected throughout the vessel is processed through one primary MSD unit for treatment.
- 4.1 After processing from the primary unit, effluent is discharged below the surface of the water at a point adjacent to the main engine room on the port side. Visual inspection of the receiving water must be conducted daily, during daylight hours at the times of maximum discharge to verify no foam, floating solids or garbage is discharged. Visual inspection results, time of day observed and estimated volumes will be recorded on the NPDES Master Spreadsheet.
- 4.2 Weekly samples of treated waste will be collected and sent to the laboratory for analysis (BOD, TSS & Fecal Coliform) as described in Section 5.0 below. Analytical results will be reported to Shell Environmental Department for submittal of the netDMR to EPA.
- 4.3 The pH will be measured weekly using a pH meter and information recorded on the NPDES Master Spreadsheet.
- 4.4 In the event of a failed test result, Shell Environmental Department will notify the Shell Drilling Superintendent. The MSD will be shut off and all sanitary waste will be stored onboard until required repairs are completed to the marine sanitation device and a subsequent analytical test documents proper operation.
- 4.5 The M-I SWACO NPDES Compliance Specialist will immediately report to Shell Environmental Department at 907-830-7435, of any upset condition.

5.0 Effluent Limitations and Monitoring Requirements - Sanitary Waste (D003):

Effluent Parameter	Effluent Limitations		Monitoring Requirements	
	Average Monthly Limit	Maximum Daily Limit	Sample Frequency	Sample Type
Flow (mgd)	----	----	Daily	Measured/Recorded
BOD ₅	30 mg/L	60 mg/L	Weekly	Grab or composite
TSS	30 mg/L	60 mg/L	Weekly	Grab or composite
Floating Solids, Foam, Oily Sheen	No discharge		Daily	Visual
pH	6.5-8.5 s.u.		Weekly	Grab
Fecal Coliform Bacteria	100 colonies/100 mL	200 colonies/100 mL	Weekly	Grab

6.0 Clean-Up:

6.0 Follow housekeeping procedures.

7.0 Contingency:

- 7.0 Consideration will be given to utilizing the secondary MSD to process sanitary waste effluent if the primary MSD fails. During the interim period, the sanitary waste effluent may be diverted to storage tanks for interim holding.
- 7.1 The rig has seven (7) storage tanks (Port: 16, 17, 18 & 28 and Starboard: 16, 17 & 18) available to use in the event sanitary waste effluent does not meet NPDES GP discharge requirements.
- 7.1.1 These tanks can store 885 cubic meters (233,790 gal.) of sanitary waste effluent. This would allow for approximately 30 days of operating before tanks would need to be emptied.
- 7.1.2 Tank volumes could be transferred to another vessel and then transferred to an approved utility treatment facility for disposal.

Revision Log:

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